

What is claimed is:

1. A heat radiation structure of a semiconductor device, comprising:

a substrate having, on a surface thereof, a first area on which the semiconductor device is mounted, and a second area which surrounds the first area; and

the semiconductor device having a first surface and a second surface opposite to the first surface, and formed with a plurality of terminals provided on the first surface,

wherein the semiconductor device is mounted on the substrate in such a manner that the first surface is opposite to the surface of the substrate, and

wherein a first heat radiating film is formed on the second area of the substrate, and a second heat radiating film is formed on the second surface of the semiconductor device with being spaced away from the first heat radiating film.

2. A heat radiation structure of a semiconductor device, comprising:

a substrate with the semiconductor device mounted on the surface thereof; and

the semiconductor device, which includes a first surface, a second surface opposite to the first surface and a plurality of side surfaces provided between the

first surface and the second surface and which is formed with a plurality of terminals on the first surface,

wherein the semiconductor device is mounted on the substrate in such a manner that the first surface is opposite to the surface of the substrate, and

wherein a heat radiating film is formed on the surface of the substrate so as to cover the second surface of the semiconductor device and expose the side surfaces of the semiconductor device.

3. A heat radiation structure according to claim 1, wherein the substrate is provided with external electrodes connected to an external board.

4. A heat radiation structure according to claim 1, wherein the substrate is provided with external electrodes connected to an external board, and the semiconductor device is mounted on the substrate in plural form.

5. A heat radiation structure according to claim 1, wherein the substrate includes external electrodes connected to an external board, and the external electrodes are formed on the back of the substrate.

6. A heat radiation structure according to claim 1, wherein wirings are formed on the surface of the

substrate, and the terminals of the semiconductor device and the wirings of the substrate are electrically connected to one another.

7. A heat radiation structure according to claim 1, wherein the semiconductor device includes a semiconductor element formed with an electronic circuit and a resin layer formed on the semiconductor element, and the terminals are formed on the resin layer.

8. A heat radiation structure according to claim 1, wherein the surfaces of the first and second heat radiating films are exposed.

9. A heat radiation structure according to claim 1, wherein wirings are formed on the surface of the substrate, and the first heat radiating film is formed so as to cover the wirings.

10. A heat radiation structure according to claim 1, wherein openings are defined in the first heat radiating film, and parts of the surface of the substrate are exposed through the openings.

11. A heat radiation structure according to claim 1, wherein openings are defined in the second heat radiating film, and parts of the second surface of the

semiconductor device are exposed through the openings.

12. A heat radiation structure according to claim 1, wherein a seal is applied onto the second surface of the semiconductor device, openings are defined in the second heat radiating film, and the openings are provided such that the seal is exposed.

13. A heat radiation structure according to claim 1, wherein the thickness of each of the first and second heat radiating films ranges from 30 μ m to 200 μ m.

14. A heat radiation structure according to claim 1, wherein the first and second heat radiating films respectively comprise a common material.

15. A heat radiation structure according to claim 1, wherein the first heat radiating film and the second heat radiating film are different in thermal expansion coefficient.

16. A heat radiation structure according to claim 1, wherein a film having an insulating property is used for the first and second heat radiating films.

17. A heat radiation structure according to claim 1, wherein a thermal emission film having thermal radiation

is used for the first and second heat radiating films.

18. A heat radiation structure according to claim 1, wherein the material for the first and second heat radiating films is ceramics.

19. A heat radiation structure according to claim 1, wherein the material for the first and second heat radiating films is silica alumina ceramics.

20. A heat radiation structure of a semiconductor device, comprising:

a substrate with the semiconductor device mounted on the surface thereof; and

the semiconductor device having a first surface and a second surface opposite to the first surface, and formed with a plurality of terminals provided on the first surface,

wherein the semiconductor device is mounted on the substrate in such a manner that the first surface is opposite to the surface of the substrate, and

wherein a thermal emission film having thermal radiation is formed on the surface of the substrate so as to cover the second surface of the semiconductor device.

21. A method of manufacturing a heat radiation structure, comprising the steps of:

preparing a substrate;
mounting a semiconductor device on the substrate;
and
supplying a liquid heat radiating material to
thereby form a heat radiating film on the substrate so as
to cover an upper surface of the semiconductor device and
expose side surfaces thereof.

22. A method according to claim 21, wherein the
heat radiating material supplying step has a step for
spraying the liquid heat radiating material onto the
substrate and the semiconductor device in mist form.

23. A method according to claim 21, wherein the
heat radiating film is formed by heating the supplied
heat radiating material.

24. A method according to claim 21, wherein the
heat radiating material is supplied from above the
substrate.

25. A method according to claim 21, wherein the
heat radiating material is liquid ceramics.

26. A method of manufacturing a heat radiation
structure, comprising the steps of:

preparing a substrate;

mounting a semiconductor device on the substrate;
and

supplying liquid ceramics to thereby form a heat radiating film on each of the semiconductor device and the substrate exposed from the semiconductor device.

27. A heat radiation structure of a semiconductor device, comprising:

a substrate;

the semiconductor device mounted on the surface of the substrate;

an insulating layer formed on the surface of the substrate so as to cover the surface of the semiconductor device; and

a heat radiating film formed on the insulating film or the back of the substrate.

28. A heat radiation structure according to claim 27, wherein an electronic part is packaged on the surface of the substrate in addition to the semiconductor device.

29. A heat radiation structure according to claim 27, wherein a resin is used as a material for the insulating layer.

30. A heat radiation structure according to claim 27, wherein a thermal emission film containing ceramics

is used for the heat radiating film.

31. A heat radiation structure according to claim 27, wherein the heat radiating film is formed over the whole area of the upper surface of the insulating layer or the whole area of the back of the substrate.

32. A heat radiation structure according to claim 27, wherein openings are defined in the heat radiating film.